

BAB V

KESIMPULAN DAN SARAN



BAB V

KESIMPULAN DAN SARAN

V.1. Kesimpulan

Dari penelitian adsorpsi larutan Nitrobenzene dengan adsorben bubuk daun intaran dalam variabel-variabel yang diteliti didapatkan kesimpulan bahwa :

1. Persen (%) *removal* nitrobenzene maksimum dengan bubuk daun intaran mencapai 77%.
2. Isoterm adsorpsi nitrobenzene menggunakan bubuk daun intaran dapat dideskripsikan dengan baik oleh persamaan Langmuir.
3. Kinetika adsorpsi nitrobenzene menggunakan bubuk daun intaran dapat dideskripsikan dengan baik oleh *pseudo-first-order* dibandingkan dengan *pseudo-second-order*.
4. Termodinamika adsorpsi nitrobenzene menunjukkan proses adsorpsi berjalan secara *reversible* dan eksotermis.

V.2. Saran

1. Sebaiknya dilakukan penelitian lebih lanjut tentang pengaruh konsentrasi terhadap adsorpsi nitrobenzene.
2. Sebaiknya dilakukan penelitian lebih lanjut mengenai dinamika adsorpsi nitrobenzene.

DAFTAR PUSTAKA



DAFTAR PUSTAKA

1. "Nitrobenzene." <http://en.wikipedia.org/wiki/Nitrobenzene>
2. Amarasinghe, B. M. W. P. K, and Williams, R.A. "Tea Waste as a low cost adsorbent for the removal of Cu and Pb from wastewater." Chemical Engineering Journal 132 (2007): 299-309.
3. Levine, Ira N. Physical Chemistry. New York: McGraw Hill, 2002.
4. Bhattacharyya, K.G, and Sharma, A. "Adsorpsi of Pb(II) from aqueous solution by Azadirachta indica (Neem) leaf powder." Journal of Hazardous Material B113 (2004): 97-109.
5. Venugopal, P.V, and Venugopal, T.V. "Antidermatophytic activity of Neem (Azadirachta indica) leaves in vitro." Indian Journal Pharmacol 26 (1994): 141-143.
6. Rawat, N.S. "Neem plantation for better pesticides for reducing poverty and for protecting environment in India." Indian Journal Environ. Prot 14 (1994): 433-439.
7. Majumdar, A.M; Upadhyay, A.S; and Pradhan, A.M. "Effect of Azadirachta Indica leaf extract on carbon tetrachloride-induced hepatic damage in albino rats." Indian journal Pharm science 60 (1998): 363-367.
8. Chopra, R.N; Nayer, S.L; and Chopra, I.C. Glossary of Indian Medicinal Plants. New Delhi, 1956.
9. Chattopadhyay, R.R; Chattopadhyay, R.N; and Maitra, S.K. "Possible mechanism of anti-inflammatory activity of *Azadirachta Indica* leaf extract." Indian Journal Pharmacol 25 (1993): 99-100.
10. "Neem Foundation " [http://www.neemfoundation.org/wiki/Neem Foundation](http://www.neemfoundation.org/wiki/Neem_Foundation)
11. Sharma, A., and Bhattacharya, K.G. "Azadirachta indica (Neem) leaf powder as a biosorbent for removal of Cd(II) from aqueousmedium." Journal of Hazardous Material B125 (2005): 102-112.
12. C.C., Thio. "Adsorption of basic dye onto activated carbon prepared from Durian Shell." Universitas katolik widya mandala, 2006.
13. "Ambang batas Nitrobenzene Dalam Limbah." [http://google.com/Ambang batas Nitrobenzene Dalam Limbah](http://google.com/Ambang_batas_Nitrobenzene_Dalam_Limbah)
14. "Adsorption." <http://en.wikipedia.org/wiki/Adsorption>
15. Stover, EL. , and Kincannon, DF. "Biological treatability of specific organic compounds found in chemical industry wastewaters." Journal Water Pollut Control Fed 55 (1983): 97-104.
16. Do, D.D. Adsorption Analysis : Equilibria And Kinetics. Queensland: Imperial College Press, 1998.
17. Smith, J.M. Chemical Engineering Kinetics. Singapore: McGraw-Hill, 1981.
18. Gerhartz, W. Ullmann's Encyclopedia of Industrial Chemistry 5th completely revised edition. Weinheim: VCH-Federal Republic of germany, 1985.
19. Yang, R.T. Gas Separation by Adsorption Processes, 1997.
20. Ketaren, S. Pengantar Teknologi Minyak dan Lemak Pangan Jakarta: UI Press, 1986.

21. Maron, S.H Fundamentals of Physical Chemistry. London: Macmilan, 753, 1974.
22. Schmutterer, H. The Neem Tree in: H. Schmutterer (Ed). Germany: VCH Weinheim, 1995.
23. Raju, K.R.T; Reddy, T.V; and Gonda, C. The Neem Tree in: H. Schmutterer (Ed): VCH Weinheim, 1995.
24. Radwanski, S.A, and Wickends, G.E. "Econ." Bot 35 (1981): 398.
25. Kraus, W. Biologically active ingredients in the neem tree, in: H. Schmutterer (Ed) The neem tree Azadirachta indica A. Juss. and other Meliaceous Plants: VCH Weinheim, 1995.
26. Muyassaroh, W.N.S., and S., Viera. Penentuan Kadar Azadirachtin pada Tanaman Mimba. Seminar Nasional Fundamental dan Aplikasi Teknik Kimia 2005 (2005).
27. Bhattacharya, A.K; Naiya, T.K; Mandal, S.N ; and Das, S.K. "Adsorption, kinetics and equilibrium studies on removal of Cr (IV) from aqueous solutions using different low-cost adsorbent." Chemical Engineering journal xxx (2007) (2007): xxx-xxx.
28. Ho, Y.S. , and McKAY, G. A comparison of chemisorption kinetics models applied to pollutant removal on various sorbents: Institution of Chemical Engineers 1998.
29. Khan, N.A.; Hanani, W.; and Amin, W.M. Kinetics of cadmium uptake by sugarcane bagasse in Water & Wastewater Asia, 2005.
30. Koyuncu, H. "Adsorption kinetics of 3-hydroxybenzaldehyde on native and activated bentonite." Applied Clay Science xx (2007): xxx-xxx.
31. Ho, Y.-S. "Review of second-order models for adsorption systems." Journal of Hazardous Material B136 (2006): 681-689.
32. Hameed, B.H; Ahmad, A.A.; and Aziz., N. "Isotherms, kinetics and thermodynamics of acid dye adsorption on activated palm ash." Chemical Engineering Journal xxx (2007): xxx-xxx.
33. Chen, H. , and Wang, A. "Kinetic and isothermal studies of lead ion adsorption onto palygorskite clay." Journal of Colloid and Interface Science 307 (2007): 309-316.
34. G.Crini. "Non-conventional low-cost adsorbents for dye removal : A review." Bioresource Technology 97 (2006): 1061.
35. Y, Sudaryanto.; S.B, Hartono.; W, Irawaty.; H, Hindarso.; and S, Ismadji. "High surface area activated carbon prepared from cassava peel by chemical activation." Bioresource Technology 97 (2006): 734.
36. Treyball, R.E. Mass Transfer Operations. Singapore: Mc, Graw Hill Book Co. 573-574, 581-582., 1981.
37. Kipling, J.J. Adsorption for solution of Non Electrolytes. London: Academic Press, 1965.
38. Ho, Y.S, and Ofomaja, A.E. "Biosorption thermodynamics of cadmium on coconut copra meal as biosorbent." Biochem. Eng. J 30 (2006): 117-123.
39. Zhou, D.; Zhang, L.; and Guo, S.L. "Mechanisms of lead biosorption on cellulose/chitin beads." Water Research 39 (2005): 3755-3762.